

Please replace the paragraphs beginning at page 1, line 26 through page 2, line 20 with the following rewritten paragraphs:

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B The expression "self-scanning shopping system" refers to a self-service shopping system wherein the optical code reading is not carried out by the operator of the shopping centre assigned to the checkout counter, but by the customer himself, through a special portable terminal previously taken from a special terminal dispensing device provided into the shopping centre. In such shopping system, the customer reads the optical code of the products he intends to buy as he takes them off the shelves of the shopping centre, and before putting them into the trolley or basket. At the end of the shopping operations, the customer places the terminal back into the device from which he had taken it. He withdraws from the same a ticket showing the amount to be paid and goes to the checkout counter to make the payment after having handed over the ticket. Alternatively, the customer directly goes to the checkout counter of the shopping centre with the terminal; the latter is given to an operator of the shopping centre who, through a suitable device, downloads the data stored into the terminal, so as to finally calculate the total amount to be paid.

As known, self-scanning shopping systems allow to remarkably speed up the checking operations carried out by the checkout-counter operators in shopping centres, relieving them of the burden of carrying out optical-code reading operations on the single products. In fact, the operations often cause long queues at the checkout counters, especially at particular rush hours, such as for example, the closing time.

Please replace the paragraph beginning at page 2, line 24 through page 3, line 8 with the following rewritten paragraph:

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B US Patent 5,468,942 describes a device for dispensing portable terminals for a self-scanning shopping system, comprising a rack consisting of several vertically arranged compartments, each adapted to house a portable terminal. Moreover, the device

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B comprises an identification unit of the customers of the shopping centre enabled to the use of the portable terminals. The unit is arranged, in the shopping centre, next to the rack. The device also comprises a computer wherein the data relating to the customers enabled to the use of the terminals are stored. The computer controls the customer identification unit and indicates, to each identified customer, the terminal to be withdrawn by activating suitable visual indication means provided in the proximity of the terminals, or by displaying said indications on a small display. At the end of the shopping operations, the customers places the terminal back into its compartment, and withdraws from the device a ticket showing the total amount to be paid. Then the ticket is handed over to a checkout counter operator, who registers the payment made by the customer.

Please replace the paragraphs beginning at page 3, line 12 through line 27 with the following rewritten paragraphs:

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B A first drawback relates to the wall-arrangement and to the large size of the rack which takes up much space, thus reducing the exhibiting area of the shopping centre. Thus, its arrangement in the shopping centre cannot be casual, but it is limited to particular areas thereof. These areas must be suitably arranged to house the rack. Thus, they must be accurately determined according to the inner layout of the shopping centre and during the organisation of the layout.

A second drawback relates to the difficulty of identifying the terminal to be withdrawn by the client. The client, in fact, must first identify himself at the identification unit. Then he must move in front of the rack to take the terminal assigned to him. Depending on the position of the terminal in the rack, its withdrawal can be quite difficult.

Please replace the paragraph beginning at page 4, line 14 through line 21 with the following rewritten paragraph:

B⁶
Although compact and functional for identifying the terminal to be withdrawn, the above described dispensing device exhibits some drawbacks related to the presence of the means for moving the compartments, and in particular, to the presence of sliding contacts between mobile and fixed portions of the dispensing device. These features imply significant difficulties of construction, installation and operation.

Please insert the following heading between lines 28 and 29 on page 4:

B⁷
SUMMARY

Please insert the following heading before line 1 on page 12:

B⁸
BRIEF DESCRIPTION OF THE DRAWINGS

Please replace the following paragraphs beginning on page 12, line 5 through line 15 with the following rewritten paragraphs:

- B⁹
- Fig. 1 shows a perspective view of a terminal dispensing device according to the present invention;
 - Fig. 2 shows a schematic and partly sectioned view of a detail of a terminal housing portion of the dispensing device of Fig. 1;
 - Fig. 3 shows a schematic view of a first embodiment of a system for dispensing terminals according to the present invention;
 - Fig. 4 shows a schematic view of an alternative embodiment of the system for dispensing terminals of Fig. 3.

Please insert the following heading between lines 15 and 16 on page 12:

B¹⁰
DETAILED DESCRIPTION

Please replace the following paragraphs beginning on page 12, line 16 through page 13, line 33 with the following rewritten paragraphs:

In the figures, reference numeral 1 indicates a dispensing device of portable terminals for acquiring product data in a shopping centre. Dispensing device 1 is preferably intended to be used in medium-large shopping centres for the purpose of implementing a self-scanning shopping system.

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The dispensing device 1 comprises of a single container 2 provided with a support base 3, a main body 4, and a substantially flat and horizontal shelf portion 5. The support base 3 is provided with wheels 6 for allowing the dispensing device 1 to be moved into the shopping centre.

The shelf portion 5, in particular, comprises a box-shaped body 7 internally provided with a structure with matrix organisation. The body 7 comprises a metal grating provided with a plurality of compartments 8, defining static cradles for portable terminals 9 adapted to be withdrawn and used by the customers of the shopping centre authorised to their use. The compartments 8 (66 such compartments in the specific example, represented in Fig. 1, arranged in a matrix of 11 rows on 6 columns) are divided into boxes. In the example of Fig. 1, each box has 6 compartments.

Moreover, the container 2 comprises a body 10 arranged next to the shelf portion 5 and above the main body 4. Body 10 comprises identification means 30 for identifying the customers enabled to use the portable terminals. The identification means 30 can be of various types, such as, for example: a magnetic card reader, a smart card reader, a bar code card reader, an optical receiver, a radio or mobile phone receiver, a fingerprint reader, a fingerprint or retina detector, a device for entering a numerical code (alphanumeric keyboard), a touch screen, a voice detector, etc.

Moreover, container 2 comprises means 34 for communicating to the identified customers the terminal to be withdrawn. The communication means 34 can be of various

types, including (for example): visual indication means on a display or monitor 11, visual indication means in the proximity of each cradle of said plurality of cradles (for example a LED), sound or voice indication means through loudspeakers, terminal lifting means provided into each cradle of said plurality of cradles (for example, electromechanical or magnetic lifting means).

B¹¹
Inside the body 4 there is housed a control and data processing unit 36 adapted to control the customer identification means 30, the customer indication means 34 of the terminals 9 to be withdrawn, and a means 38 for generating marketing and/or promotional information and/or discount vouchers. Moreover, the control and data processing unit processes the data stored in terminal 9 during the purchase operations so as to allow different processing operations, such as for example, computing the overall amount to be paid for that purchase operation, or creating a database with information on the customers' purchase habits, processing reports, etc.

✓
Please replace the following paragraphs beginning on page 14, line 9 through page 16, line 25 with the following rewritten paragraphs:

B¹²
As regards the inner structure of compartments 8 for housing the terminals 9, as shown in Fig. 2, each compartment 8 comprises an upper aperture 12 for inserting the terminal 9, and a lower service aperture 13. The lower aperture 13 preferably has a size larger than that of the upper aperture 12, and arranged below the latter. A vertical axis X-X and a terminal insertion oblique axis Y-Y, inclined with respect to the vertical axis X-X by a predetermined angle α are defined in the upper aperture 12.

Inside each compartment 8 there is provided a terminal support element 14 provided with opposed walls 15a, 15b, inclined by angle α with respect to axis X-X, and adapted to constitute guiding surfaces for terminal 9 inserted into the compartment 8. A terminal support step 16 is formed onto the wall 15a. Angle α is predetermined so that the terminal support element 14, and thus the terminal support step 16, is outside the projection of aperture 12 along the vertical axis X-X, so as to allow the discharge of small

objects that may enter the compartments 8, and for preventing dust collection into therein.

On the step 16 there are provided electric connectors 17 adapted to co-operate with respective connectors provided onto the base surface of the terminal 9. The co-operating connectors 16, 17 allow the recharge of the batteries of the terminal 9 and/or data uploading or downloading to and from the terminal 9 before and after the self-scanning operations, so as to proceed, in this last case, to the computing operations of the overall amount to be paid. The upload and download (or transmission and reception) of the data with the terminals, as it will be better explained hereinafter, can also occur through optical (for example, IrDA) or radio communication.

In the assembling operations of the dispensing device 1, the boxes including the compartments 8 can be inserted into the box-shaped body 7 of container 2 complete with the terminal support elements 14, with electronic cards and wirings. The box wiring connection to the main wiring of the dispensing device is possible through special connectors provided on the short sides of the box itself.

B¹²
The box-shaped body 7 comprises a covering surface 18 provided with a plurality of holes 19. Each hole 19 is provided at each corresponding upper aperture 12 of compartments 8. Surface 18 is of primary importance both for aesthetic and functional reasons. Since the dispensing device is displayed in environments open to the public, it is important that it have a good aesthetic finishing. Moreover, the covering surface is resistant with no degradation to light shocks to which the dispensing device may be subject in the environment where it is arranged.

When inserted into the appropriate compartment 8, the terminal 9 protrudes by about 2/3 of its length, so as to offer an easy grip to the authorised customer. The entry of the compartment is wide, strongly smoothed and progressively narrowing, so as to guarantee, on the one hand, an easy insertion of the terminal and, on the other hand, a precise arrangement of the same, when completely inserted.

In each compartment 8 there is provided a locking/unlocking device for terminals 9, which prevents withdrawal any unauthorised or unidentified person. The locking/unlocking device can be, for example, mechanical, electromagnetic or magnetic.

Fig. 2 shows an embodiment of said device which provides for the use of a mobile pin 20 adapted to be fixed into a suitable notch provided onto the terminal 9.

B¹²
Inside each compartment 8 there are also provided one or more sensors (not illustrated) for detecting the presence of terminal 9. The use of two sensors allows detecting not only the presence, but also the wrong arrangement (e.g. orientation) of terminal 9 into the compartment 8, due (for example) to the presence of foreign matter. Moreover, there is provided a luminous indication system to be actuated for showing to the customer the terminal to be used (for example, a LED 42 (see Fig. 2) arranged on the upper surface of each compartment, or all around it), and a terminal lifting mechanism 44 which lifts the terminal after it has been selected (for example, an electromechanical or magnetic mechanism).

Moreover, inside the compartment 8 there is present a communication system that allows the terminal inserted into the compartment to communicate with the dispensing device control unit. This connection can be implemented in various ways. In particular, it can be a physical connection, through the electric connectors 17 arranged on the step of the terminal support element 14, or it can be optical, through an optical transceiver arranged into compartment 8, or a radio connection, through a radio connection to a transceiver arranged into compartment 8 or centralised.

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Please replace the following paragraphs beginning on page 17, line 4 through line 32 with the following rewritten paragraphs:

B¹³
Inside the dispensing device 1, there is provided the arrangement of one or more printers 46 used for printing the identification ticket of the shopping operation carried out, or for printing coupons and/or marketing messages addressed to the customer before or after the shopping operation. Preferably, the printers 46 are orientated at both the main sides of the dispensing device, and are arranged so as to allow a quick identification and the immediate withdrawal of tickets and/or coupons. The identification of the printer from which the ticket is to be withdrawn after restitution of the terminal is facilitated by the use

of matching colours between ticket output window and terminal compartments and/or by the use of flashing LEDs 48 arranged in the proximity of the printers.

B¹³
As shown in Fig. 3 and 4, the dispensing device 2 is adapted to operate in an integrated system 100 for dispensing portable terminals arranged in the shopping centre (schematically indicated in the figures with reference numeral 50) and, more in general, in an integrated product sales system in the shopping centre. The integrated system 50 provides for the use of one or more dispensing devices 1, of a (central) control station 80 of the dispensing device(s) 1, and of a connection network 60 between the dispensing device(s) and the control station for allowing the exchange of information between them. Thus, as single interfaces to the outside, the container 2 exhibits a connection with the power supply and a connection to the control station 80 of the same. Moreover, station 80 is connected to one or more cash registers 90.

Please replace the following paragraph beginning on page 18, line 6 through line 15 with the following rewritten paragraph:

B¹⁴
The complete management of all the functions of the dispensing device and of the integrated system of the present invention is preferably carried out in a remote way. The preferable project choice is that of using WEB technologies also for the connection to the management centre 150. From the management centre 150 it is possible to: generate statistical reports on the sales activity carried out by the dispensing device, configure the operation of the dispensing device, configure the terminals, monitor the operation of the dispensing device and of the terminals.

Please replace the following paragraph beginning on page 18, line 20 through page 19, line 2 with the following rewritten paragraph:

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In a first embodiment of the dispensing device of the present invention, terminals 9 are provided with radio connection. The radio connection can be implemented through a wireless local network, hereinafter indicated with WLAN (for example, IEEE 802.11

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radio) or through geographic network, hereinafter indicated with WAN (for example, radio-mobile GSM, GPRS or UMTS). Said terminals (also called RF terminals) use the radio connection to communicate with dispensing device 1 during the shopping step. In this case, the RF terminal serves as a client that uses the dispensing device (which operates as a server) for any shopping operation: all data allowing the product sale reside in the dispensing device, which provides them to the terminal only when they request it. Moreover, the dispensing device maintains the list of the products purchased by that particular customer (shopping basket). The communication between RF terminal and dispensing device is preferably based on the use of standard WEB protocols. The same terminal can be provided only with a WEB browser.

Please replace the following paragraphs beginning on page 19, line 9 through page 20, line 29 with the following rewritten paragraphs:

On the basis of the type of terminal 9 used, the shopping operation can occur according to different modes. According to a first mode (called Two-steps-and-go, and illustrated in Fig. 3), the customer must return terminal 9 to the dispensing device 1, which downloads the shopping data from the terminal, prints an identification ticket of the shopping carried out, and transmits to the control station 80 of the seller the data allowing the payment of the shopping at one of the checkout counter 90.

B¹⁶
According to a second shopping mode (called One-step-and-go, and illustrated in Fig. 4), the customer does not return the terminal into the dispensing device 1 after the shopping operation, but instead directly brings it to counter 90. Depending on the type of terminal used, the registration and closure of the shopping can occur in either of two ways. The first way is

the case of BATCH terminals, through direct communication between terminal 9 and checkout counter 90. In this case, the terminal 9 is placed into an appropriate cradle 95 provided in proximity of counter 90. Terminal then communicates to the counter 90 the data for printing the ticket through the control station 80 or directly (see Fig. 4).

The second way is the case of RF terminals, through communication between dispensing device 1 and counter 90. Terminal 9 recognises the end of the shopping operations (for example, by the reading of a special bar code by the counter operator) and communicates it to the dispensing device through the connection network 60. In turn, the dispensing device send the data for printing the ticket (passing from the control station 80 which controls counters 90). In this case, the customer does not need to return to the dispensing device before exiting.

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B The dispensing device of the present invention has the possibility of using, for the shopping operations, also RF terminals which are external with respect to those housed into compartments 8. For example, it is possible to use RF terminals of the PDA and Pager type, radio-mobile units (GSM, UMTS, etc.) that can communicate on any wireless transport means with WEB standard protocols (TCP/IP, HTTP, XML, WAP, etc.) and provided with a data code reader belonging or given for personal use to the customers of the shopping centre. In this case, after the identification of the customer, which can be carried out both manually and automatically, as described hereinafter, the actual terminal withdrawal step is skipped over, and the customer can start his shopping operation with his own terminal exactly in the same way as he would use an RF terminal withdrawn from the dispensing device. This function is made possible by the use of standard WEB technologies for the communication between dispensing device and terminal during the shopping. Actually, the dispensing device works as a portal which provides the self-scanning service to both the customers into the shopping centre and to the customers outside it, for example at their home, allowing the Home scanning (for example on a catalogue or on products to be re-ordered), or Home shopping.

Please replace the following paragraphs beginning on page 20, line 33 through page 21, line 26 with the following rewritten paragraphs:

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B Manual systems comprise, for example, a magnetic card reader, a smart card reader, a bar-code card reader, an optical receiver, etc. In all these systems, the seller

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provides the customer with a card on the basis of its use criteria (for example, members, regular customers, etc.). This card could also be a normal credit card or card for cash dispenser. In this case, an adjustable monitor 11 can be provided, on which there are displayed the operating instructions for using the system, such as (for example) the indication of the terminal to be withdrawn or the request of typing a PIN CODE. In consideration of its standard size, the monitor can also be used for sending marketing communication messages and/or various advertisement messages (videos, static and active banners, etc.). Moreover, there can be present an alphanumerical keyboard for typing a PIN code (usually implemented with a touch screen system connected to the monitor) and a loudspeaker system for transmitting sound messages or music.

The identification operation is carried out under the control of the control unit of the dispensing device. After the card has been inserted into the reader, the control unit commands the reading of the same card and carries out the identification of the customer using information inserted into its database or forwarding (through network) the request for identification to the control station 80. Moreover, the control unit carries out the control of the typed code and provides to select and visually indicate to the customer a terminal 9 to be used for the shopping operations. One of the visual indications provided is graphical, and is displayed on the monitor 11.

Please replace the following paragraphs beginning on page 21, line 30 through page 22, line 33 with the following rewritten paragraphs:

B¹⁷
The automatic systems provide for the use of identification means characterised by a very high safety level and by a very low interaction degree between the identification tool and the user so as to facilitate its use. Such systems comprise, in particular, a receiver capable of accepting optical (for example, IrDA), radio (for example, Bluetooth), mobile phone (for example, GSM telephone), radiofrequency tag, JAVA Ring connections, etc. In all these cases, the receiver is capable of accepting the connection and identification request coming from a terminal (such as PDA, pager, GSM telephone, or UMTS),

checking the customer identification data by comparing it with the known ones, optionally requesting a PIN code or a password to be typed directly on the terminal withdrawn by the customer. The communication protocols used can be of a various types, such as for example Web protocols on wireless local or radio network with short-range, such as Bluetooth (useful for example when using PDA), or dedicated protocols (useful for example when using GSM or UMTS telephones). A variant of this solution provides for the use of voice recognisers, fingerprint recognisers and retinae recognisers.

B¹² During the user identification step it is also possible to get information on the payment system that the customer wants to use (for example, credit card). Said information can be passed to the control station 80 so as to further automate (and thus speed up) the registration step at the end of the shopping operation. In fact, in this way, the customer does not need to show his credit card at the checkout counter.

The payment information can also be directly exchanged with the terminal owned by the customer if said terminal is provided with an integrated electronic payment system (e-wallet). In this case, the dispensing device has the function of guaranteeing the transactions, by interposing itself between the customer and the seller: a customer is enabled to use his payment system after having identified himself at the dispensing device and after having communicated to the latter the information of the payment transaction.

Please replace the following paragraph beginning on page 23, line 21 through line 24 with the following rewritten paragraph:

B¹⁹ In particular, the management of the terminals comprises managing the terminal's batteries, updating the software and the data loaded on the terminals, and checking the terminal's state.

Please replace the following paragraphs beginning on page 24, line 20 through page 25, line 6 with the following rewritten paragraphs:

B²⁰ The dispensing of the terminal to the customers occurs on the basis of the

B²⁰
(assumed) state of charge of the batteries and of the update degree (software and data) of the terminals currently present into the dispensing device. After having selected the terminal, the control unit provides to command the unlocking of the selected terminal and to indicate it to the customer (for example, through the lighting up of a LED arranged near it and optional lifting of the terminal in the respective compartment). Moreover, a graphical representation of the terminal to be withdrawn and of the manual operation to be carried out is displayed on the identification monitor 11 concurrently with a sound message.

As already said, the control unit also allows the use of terminals belonging to the customers, such as PDA, pagers, mobile phones, etc., capable of connecting to the dispensing device through the standard WEB protocols used by the same dispensing device. The management of the terminals is totally equal to that of the terminals of the dispensing device, with the exception of the dispensing step of the same, which is actually eliminated.

Please replace[✓] the following paragraph beginning on page 25, line 9 through line 25 with the following rewritten paragraph:

B²¹
With RF terminals, the data that allows carrying out the sales operations (PLU – Price Look Up, promotions, discounts, etc.) is maintained in a database of the dispensing device by the control unit, whereas on the terminals there is available only the software that allows making queries to the database of the dispensing device. The connection between terminals and dispensing device occurs using standard WEB protocols (TCP/IP, HTTP, XML, WAP, etc.). The terminal actually functions as a client, while the control unit is the server. For example, a terminal may be provided with a WEB browser. More in particular, the control unit uses a commercial WEB server program (such as for example Microsoft Internet Information Server) for providing its services to the terminals. Especially important is also the use of the XML language for the representation in universal format of the transferred data.

✓
Please replace the following paragraph beginning on page 26, line 8 through line 23 with the following rewritten paragraph:

B22
The self-scanning system of the invention is advantageously arranged for a modular growth. When the number of terminals needed in a shopping centre exceeds the maximum number provided for a single dispensing device, it is possible to add a new dispensing device and so on, with no particular limits. The functions, the usage modes for the customers and the management modes for the seller of a shopping centre with more dispensing devices are exactly the same as those of a single dispensing device. Each dispensing device appears to the customer as an independent machine, with the advantage of having the possibility of selecting any dispensing device in which to return the terminal at the end of the shopping operations. Preferably, the various dispensing devices communicate with one another for exchanging status information, software for the terminals and data.

Please replace the following paragraphs beginning on page 29, line 31 through page 31, line 18 with the following rewritten paragraphs:

The man skilled in the art will clearly note that all the solutions, systems and software described above with reference to the terminal dispensing device of the present invention can be carried out and implemented in the same way also on different dispensing device.

B23
Moreover, it will be evident that the self-scanning system described above, besides operating with terminals dispensed by suitable dispensing devices, such as that of the present invention, can operate also with personal terminals (or belonging to the customers) or even only with personal terminals. In these last cases, the system is capable of automatically recognising the customers through the recognition of their personal terminals. As for the rest, all the operations described above, such as for example the product data acquisition and download, and their subsequent processing for computing